

COMPUTER SOFTWARE TO: PRINT SIGNS

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This program is written in PL/I and is 517 statements long. The complete program source text listing and instructions follow on the pages numbered 1 through 13.

Statements may be keypunched anywhere on a card between columns 2 and 72 inclusive but, for readability, statements should begin in column 10 and statement labels should begin in column 2. Note that PL/I statements end with a semicolon and that statement labels end with a colon. Documentation comments take the form `/* comment */`. Nested DO loops are indented beyond column 10 for readability.

The IBM OS/360 (370) job control language statements necessary to submit this program to the PL/I compiler (F) are as follows:

```
//jobname JOB jobcard_information
// EXEC PL1LFCLG
//PL1L.SYSIN DD *
```

source deck goes here

```
/*
//GO.SYSIN DD *
```

data deck (card) goes here

```
/*
```

Once you have the program running properly, you may wish to save paper by substituting the `// EXEC PL1LFCLG` card with the following card.

```
// EXEC PL1LFCLG,PARM.PL1L='NOSOURCE,NOATR,NOXREF'
```

Note that all of the above JCL statements must begin in card column 1. The above job control language (JCL) statements invoke a standard cataloged JCL procedure.

When running the PL/I program with the above JCL, one can expect the following compiler diagnostics. (Warning codes) IEM0227I , IEM0764I , IEM3898I

The IF THEN CALL internal procedure block structure of this PL/I program allows for easy program expansion.

```

ALPHA:  PROC OPTIONS(MAIN);
        /*****
        /* THIS PROGRAM IS WRITTEN IN PL/I FOR THE PL/I F COMPILER. */
        /* THIS PROGRAM PRODUCES LONG HORIZONTAL SIGNS IN LARGE    */
        /* BLOCK LETTERS.                                          */
        /* INPUT DATA SHOULD BEGIN IN COLUMN ONE OF THE DATA CARD. */
        /* THE INPUT DATA MUST BE FOLLOWED BY A SEMICOLON TO STOP  */
        /* PROGRAM EXECUTION.                                       */
        /* EXAMPLE-----MERRY CHRISTMAS;                          */
        /* IF A SEMICOLON DOES NOT FOLLOW THE INPUT DATA STATEMENT, */
        /* MUCH PAPER MAY BE WASTED AT THE END OF THE SIGN BEFORE  */
        /* THE END OF FILE IS REACHED.                               */
        /* THE VALID INPUT CHARACTERS ARE THE 26 ENGLISH ALPHABET  */
        /* CHARACTERS AND THE BLANK. THE ; IS USED AS EXPLAINED.   */
        /* THE ; WILL NOT APPEAR ON THE OUTPUT WALL BANNER SIGN.  */
        /* THIS PROGRAM WRITTEN BY DAVID SLIGAR *****/
        /* COPYRIGHT 1977 BY DAVID SLIGAR *****/
        /*****/
        DCL S CHAR(1);      /* S IS INPUT SYMBOL */
        DCL A(50) CHAR(100); /* A IS AN ARRAY INTO WHICH EACH
                               /* OUTPUT SYMBOL IS LOADED AND THEN
                               /* PRINTED FROM.
        DCL L FIXED BIN(16); /* L IS LINE COUNTER & SUBSCRIPT */
        ON ENDFILE(SYSIN) STOP;
        ON ENDPAGE(SYSPRINT);
GETS:   GET EDIT (S) (A(1));
        IF S=' ' THEN DO;
                PUT SKIP(40);
                GO TO GETS;
        END;
        IF S=';' THEN STOP;
        IF S='A' THEN CALL AA;
        IF S='B' THEN CALL BB;
        IF S='C' THEN CALL CC;
        IF S='D' THEN CALL DD;
        IF S='E' THEN CALL EE;
        IF S='F' THEN CALL FF;
        IF S='G' THEN CALL GG;

```

```

IF S='H' THEN CALL HH;
IF S='I' THEN CALL II;
IF S='J' THEN CALL JJ;
IF S='K' THEN CALL KK;
IF S='L' THEN CALL LL;
IF S='M' THEN CALL MM;
IF S='N' THEN CALL NN;
IF S='O' THEN CALL OO;
IF S='P' THEN CALL PP;
IF S='Q' THEN CALL QQ;
IF S='R' THEN CALL RR;
IF S='S' THEN CALL SS;
IF S='T' THEN CALL TT;
IF S='U' THEN CALL UU;
IF S='V' THEN CALL VV;
IF S='W' THEN CALL WW;
IF S='X' THEN CALL XX;
IF S='Y' THEN CALL YY;
IF S='Z' THEN CALL ZZ;

```

```

AA:  PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
          A(L)=(100)'A';
      END;
      DO L=11 TO 40;
          A(L)=(40)' '11(15)'A'11(30)' '11(15)'A';
      END;
      DO L=41 TO 50;
          A(L)=(100)'A';
      END;
      GO TO PUTS;
      END AA;

```

```

BB:  PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
          A(L)=(100)'B';
      END;
      DO L=11 TO 40;
          A(L)=(15)'B'11(25)' '11(15)'B'11(30)' '11(15)'B';
      END;

```

```

A(41)=(1)' '11(45)'B'11(1)' '11(52)'B';
A(42)=(2)' '11(43)'B'11(3)' '11(50)'B';
A(43)=(3)' '11(41)'B'11(5)' '11(48)'B';
A(44)=(4)' '11(39)'B'11(7)' '11(46)'B';
A(45)=(5)' '11(37)'B'11(9)' '11(44)'B';
A(46)=(6)' '11(35)'B'11(11)' '11(42)'B';
A(47)=(7)' '11(33)'B'11(13)' '11(40)'B';
A(48)=(8)' '11(31)'B'11(15)' '11(38)'B';
A(49)=(9)' '11(29)'B'11(17)' '11(36)'B';
A(50)=(10)' '11(27)'B'11(19)' '11(34)'B';
GO TO PUTS;
END BB;
CC: PROC; /* INTERNAL PROCEDURE */
DO L=1 TO 10;
  A(L)=(100)'C';
  END;
DO L=11 TO 50;
  A(L)=(15)'C'11(70)' '11(15)'C';
  END;
GO TO PUTS;
END CC;
DD: PROC; /* INTERNAL PROCEDURE */
DO L=1 TO 10;
  A(L)=(100)'D';
  END;
DO L=11 TO 40;
  A(L)=(15)'D'11(70)' '11(15)'D';
  END;
DCL DS CHAR(100) INIT((100)'D');
DCL (N,X) FIXED BIN(16); N=2; X=98;
DO L=41 TO 50;
  A(L)=(100)' ';
  SUBSTR(A(L),N,X)=SUBSTR(DS,1,X); /* PSEUDO VARIABLE */
  N=N+1;
  X=X-2;
  END;
GO TO PUTS;
END DD;

```

```
EE:   PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'E';
      END;
      DO L=11 TO 50;
        A(L)=(15)'E'11(25)' '11(15)'E'11(30)' '11(15)'E';
      END;
      GO TO PUTS;
      END EE;

FF:   PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'F';
      END;
      DO L=11 TO 50;
        A(L)=(40)' '11(15)'F'11(30)' '11(15)'F';
      END;
      GO TO PUTS;
      END FF;

GG:   PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'G';
      END;
      DO L=11 TO 25;
        A(L)=(15)'G'11(70)' '11(15)'G';
      END;
      DO L=26 TO 40;
        A(L)=(15)'G'11(25)' '11(15)'G'11(30)' '11(15)'G';
      END;
      DO L=41 TO 50;
        A(L)=(55)'G'11(30)' '11(15)'G';
      END;
      GO TO PUTS;
      END GG;

HH:   PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'H';
      END;
      DO L=11 TO 40;
```

```
      A(L)=(40)' 'II(15)'H';
      END;
DO L=41 TO 50;
  A(L)=(100)'H';
  END;
GO TO PUTS;
END HH;
II:  PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 20;
        A(L)=(15)'I'II(70)' 'II(15)'I';
        END;
      DO L=21 TO 30;
        A(L)=(100)'I';
        END;
      DO L=31 TO 50;
        A(L)=(15)'I'II(70)' 'II(15)'I';
        END;
      GO TO PUTS;
      END II;
JJ:  PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(40)'J';
        END;
      DO L=11 TO 40;
        A(L)=(15)'J';
        END;
      DO L=41 TO 50;
        A(L)=(100)'J';
        END;
      GO TO PUTS;
      END JJ;
KK:  PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'K';
        END;
      DCL KS CHAR(17) INIT((17)'K');
      DCL (N,X) FIXED BIN(16);  N=40;  X=43;
      DO L=11 TO 50;
```

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      A(L)=(100)' ';
      SUBSTR(A(L),N,17)=KS;          /* PSEUDO VARIABLE */
      SUBSTR(A(L),X,17)=KS;        /* PSEUDO VARIABLE */
      N=N-1;
      X=X+1;
      END;
      GO TO PUTS;
      END KK;
LL:   PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'L';
        END;
      DO L=11 TO 50;
        A(L)=(15)'L';
        END;
      GO TO PUTS;
      END LL;
MM:   PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'M';
        END;
      DCL (N,X) FIXED BIN(16);     N=74;
      DCL MS CHAR(25) INIT((25)'M');
      DO L=11 TO 25;
        A(L)=(100)' ';
        SUBSTR(A(L),N,25)=MS;     /* PSEUDO VARIABLE */
        N=N-2;
        X=MOD(N,5);
        DO WHILE (X=0);
          N=N-1;
          X=1;
        END;
      END;
      X=25;
      DO L=26 TO 50;
        A(L)=A(X);
        X=X-1;
      END;

```

```

GO TO PUTS;
END MM;
NN:  PROC:      /* INTERNAL PROCEDURE */
DO L=1 TO 10;
  A(L)=(100)'N';
  END;
DCL NS CHAR(25) INIT((25)'N');
DCL (N,X) FIXED BIN(16);
N=74;
DO L=11 TO 40;
  A(L)=(100)' ';
  SUBSTR(A(L),N,25)=NS;      /* PSEUDO VARIABLE */
  N=N-2;
  X=MOD(N,5);
  DO WHILE (X=0);
    N=N-1;
    X=1;
  END;
  END;
DO L=41 TO 50;
  A(L)=(100)'N';
  END;
GO TO PUTS;
END NN;
OO:  PROC:      /* INTERNAL PROCEDURE */
DO L=1 TO 10;
  A(L)=(100)'0';
  END;
DO L=11 TO 40;
  A(L)=(15)'0' || (70)' ' || (15)'0';
  END;
DO L=41 TO 50;
  A(L)=(100)'0';
  END;
GO TO PUTS;
END OO;
PP:  PROC:      /* INTERNAL PROCEDURE */
DO L=1 TO 10;

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      A(L)=(100)'P';
      END;
      DO L=11 TO 40;
        A(L)=(40)' '11(15)'P'11(30)' '11(15)'P';
        END;
      DO L=41 TO 50;
        A(L)=(40)' '11(60)'P';
        END;
      GO TO PUTS;
      END PP;
QQ:  PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'Q';
        END;
      DO L=11 TO 40;
        A(L)=(15)'Q'11(70)' '11(15)'Q';
        END;
      DO L=41 TO 50;
        A(L)=(100)'Q';
        END;
      DCL QS CHAR(25) INIT((25)'Q');
      DCL (N,I) FIXED BIN(16); N=32; I=28;
      DO L=26 TO 40;
        SUBSTR(A(L),N,25)=QS; /* PSEUDO VARIABLE */
        N=N-2;
        DO WHILE (L=I);
          N=N-1;
          I=I+2;
        END;
      END;
      GO TO PUTS;
      END QQ;
RR:  PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'R';
        END;
      DO L=11 TO 40;
        A(L)=(40)' '11(15)'R'11(30)' '11(15)'R';

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      END;
DO L=41 TO 50;
  A(L)=(40)' '11(60)'R';
  END;
SUBSTR(A(25),38,3)=(3)'R'; /* PSEUDO VARIABLE */
SUBSTR(A(26),36,5)=(5)'R'; /* PSEUDO VARIABLE */
SUBSTR(A(27),33,8)=(8)'R'; /* PSEUDO VARIABLE */
DCL (RS) CHAR(25) INIT((25)'R');
DCL (N,X,Q) FIXED BIN(16); N=31; X=25; Q=28;
DO L=28 TO 50;
  SUBSTR(A(L),N,X)=RS; /* PSEUDO VARIABLE */
  N=N-2;
  DO WHILE (L=Q);
    N=N-1;
    Q=Q+2;
  END;
  END;
DO WHILE (N<1);
  N=1;
  X=X-2;
  END;
GO TO PUTS;
END RR;
SS: PROC; /* INTERNAL PROCEDURE */
DO L=1 TO 10;
  A(L)=(15)'S'11(25)' '11(60)'S';
  END;
DO L=11 TO 40;
  A(L)=(15)'S'11(25)' '11(15)'S'11(30)' '11(15)'S';
  END;
DO L=41 TO 50;
  A(L)=(55)'S'11(30)' '11(15)'S';
  END;
GO TO PUTS;
END SS;
TT: PROC; /* INTERNAL PROCEDURE */
DO L=1 TO 20;
  A(L)=(85)' '11(15)'T';

```

```

      END;
      DO L=21 TO 30;
        A(L)=(100)'T';
      END;
      DO L=31 TO 50;
        A(L)=(85)' '11(15)'T';
      END;
      GO TO PUTS;
      END TT;
UU:   PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'U';
      END;
      DO L=11 TO 40;
        A(L)=(15)'U';
      END;
      DO L=41 TO 50;
        A(L)=(100)'U';
      END;
      GO TO PUTS;
      END UU;
VV:   PROC;      /* INTERNAL PROCEDURE */
      DCL VS CHAR(50) INIT((50)'V');
      DCL (N,X) FIXED BIN(16);  N=101;  X=0;
      DO L=1 TO 10;
        A(L)=(100)' ';
        SUBSTR(A(L),N,X)=SUBSTR(VS,1,X);  /* PSEUDO VARIABLE */
        N=N-5;
        X=X+5;
      END;
      X=50;
      DO L=11 TO 25;
        A(L)=(100)' ';
        SUBSTR(A(L),N,X)=SUBSTR(VS,1,X);  /* PSEUDO VARIABLE */
        DO WHILE (N=1);
          N=N+5;
          X=X-5;
        END;

```

```
      N=N-5;
      END;
      X=25;
      DO L=26 TO 50;
        A(L)=A(X);
        X=X-1;
      END;
      GO TO PUTS;
      END VV;
WW:   PROC;      /* INTERNAL PROCEDURE */
      DO L=1 TO 10;
        A(L)=(100)'W';
      END;
      DCL (N,X) FIXED BIN(16);      N=1;
      DCL WS CHAR(25) INIT((25)'W');
      DO L=11 TO 25;
        A(L)=(100)' ';
        SUBSTR(A(L),N,25)=WS;      /* PSEUDO VARIABLE */
        N=N+2;
        X=MOD(N,5);
        DO WHILE (X=0);
          N=N+1;
          X=1;
        END;
      END;
      X=25;
      DO L=26 TO 50;
        A(L)=A(X);
        X=X-1;
      END;
      GO TO PUTS;
      END WW;
XX:   PROC;      /* INTERNAL PROCEDURE */
      DCL XS CHAR(20) INIT((20)'X');
      DCL (N,X) FIXED BIN(16);      N=1;      X=5;
      DO L=1 TO 50;
        A(L)=(100)' ';
        SUBSTR(A(L),N,20)=XS;      /* PSEUDO VARIABLE */
```

```

N=N+2;
DO WHILE (L=X);
  N=N-2;
  X=X+5;
END;
END;
N=81;  X=5;
DO L=1 TO 50;
  SUBSTR(A(L),N,20)=XS;  /* PSEUDO VARIABLE */
  N=N-2;
  DO WHILE (L=X);
    N=N+2;
    X=X+5;
  END;
END;
GO TO PUTS;
END XX;
YY: PROC;  /* INTERNAL PROCEDURE */
DO L=1 TO 50;
  A(L)=(100)' ';
END;
DO L=21 TO 25;
  A(L)=(55)'Y';
END;
DCL YS CHAR(25) INIT((25)'Y');
DCL (N,X,I) FIXED BIN(16); N=98;  X=3;  I=2;
DO L=1 TO 25;
  SUBSTR(A(L),N,X)=SUBSTR(YS,1,X);  /* PSEUDO VARIABLE */
  N=N-2;
  DO WHILE (L=I);
    N=N-1;
    I=I+2;
  END;
  X=101-N;
  IF (N<76) THEN DO;
    X=25;
  END;
END;
END;

```

```
DO L=26 TO 50;
  A(L)=A(X);
  X=X-1;
  END;
GO TO PUTS;
END YY;
ZZ:  PROC;      /* INTERNAL PROCEDURE */
DO L=1 TO 50;
  A(L)=(15)'Z'11(70)' '11(15)'Z';
  END;
DCL ZS CHAR(20) INIT((20)'Z');
DCL (N,X) FIXED BIN(16);  N=1;  X=8;
DO L=1 TO 50;
  SUBSTR(A(L),N,20)=ZS;      /* PSEUDO VARIABLE */
  N=N+2;
  DO WHILE (L=X);
    N=N-2;
    X=X+8;
  END;
END;
GO TO PUTS;
END ZZ;
PUTS: DO L=1 TO 50;
  PUT SKIP EDIT (A(L)) (X(15),A(100));
  END;
PUT SKIP(10);
GO TO GETS;
FIN:  END ALPHA;
```
